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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/396,470	09/15/1999	EUEE-SEON JANG	030681-152	7479

21839 7590 03/25/2004

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EXAMINER
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SENF1, BEHROOZ M

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/396,470

Applicant(s)

JANG ET AL.

Examiner

Behrooz Senfi

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 12-16 and 19 is/are rejected.
- 7) ☒ Claim(s) 11, 18, 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                        |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____   |

### DETAILED ACTION

1. With consideration to applicant remarks and points discussed during the interview, examiner withdraws the finality of the rejection of the last Office action (paper no. 15, dated July 29, 2003).

### Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1, 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Bajaj et al. (US 6,438,266).

Regarding claims 1 and 2, Bajaja '266 discloses the claimed limitation "progressive 3-D mesh information coding" (i.e. fig. 10), and the claimed limitation "dividing a 3-D mesh into a plurality of mesh components, wherein each of the mesh components corresponds to a different partition of the 3-D mesh" (i.e. fig. 3a – 3c), and the claimed limitation "coding each of the plurality of mesh components, wherein the plurality of coded mesh components are capable of being decoded and incrementally (independently) reproduced as unit mesh parts of the 3-D mesh" (i.e. figs. 1 and 10, col. 3, lines 60+ and col. 6, lines 20 - 30) where discloses incremental encoding and transmission to decoder, and the decoder would decode the information as received incrementally, and the claimed limitation "multiplexing the plurality of code mesh

components into a compressed bit stream and transmitting the compressed bit stream" reads on (i.e. fig. 10, combine Encoding), and the claimed limitation (claim 2) "wherein each of the plurality of mesh components includes at least connectivity information, geometry information and photometry information which are necessary to reconstruct the coded mesh component" reads on (i.e. fig. 31, abstract lines 4 – 7).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 – 7, 10, 12 – 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bajaj '266.

Regarding claims 5, 10, and 15, Bajaj '266 teaches decomposing the bit streams into contours and dividing contours into plurality of mesh component, wherein the plurality of mesh components are capable of being incrementally reproduced as unit mesh parts of the 3-D mesh" (i.e. figs. 1, 3a – 3c and 10, col. 3, lines 60+ and col. 6, lines 20 - 30), and the decoding process in claim 5 is reversible process of the encoder (see fig. 1, 14, and 18). Therefore, one skilled in the art would use the decoder (18) to decode the transmitted encoded 3-d image (see the encoding process (14) of fig. 1) to display (19). Compositing the decoded image must be done by the decoder (18 of fig. 1, col. 1, lines 55+), which the decoded image has been reconstructed (synthesizing) for

display (19), and the extracting mesh layers from 3-d mesh (see layers of 0 – 3 of fig. 3a – 3b).

Regarding claim 3, the limitation as claimed “extracting one or more mesh .....” and “dividing the one or more mesh .....” has been explained in the above rejection with respect to claims 5, 10, 15.

Regarding claims 4, 6, 7, 14, and 16, in the coding/decoding process, reusing the (coded) information to speed up the process of (compression) coding/decoding, would have been obvious to one skilled in the art.

Regarding claim 12, as for “extracting mesh object layers”, the limitation as claimed is substantially similar to claim 10, and has been discussed (see the above explanation with regards to claim 10), and as for “independently coding and transmitting”, Bajaj ‘266 teaches compression and encoding and transmitting (see 14 and 15 of fig. 1 and also fig. 10), and the “decoding and reconstructing .....” (see 18, of fig. 1) and as for “removing the redundant information”, would have been obvious to one skilled in the art since removing the redundant information is one of the means primarily used for compressing data, and “a 3-d data analyzer for receiving a 3-d mesh .....” the functionality of “analyzer” as recited in the claim, for dividing a 3-d mesh into one or more independent mesh layers is similar to receiving the 3-d mesh and decomposing into one or more contours (see fig. 3a and 10), and the limitation claimed “incrementally reproducing mash parts” has been discussed above.

Regarding claims 13 and 19, Bajaj ‘266 teaches 3-d mesh information coding/decoding as discussed above, and as for “one or more mesh object layer coders

....." and "one or more mesh object layer decoders ....." (see abstract, lines 2+, fig. 1, 14 and 18, and also figs. 10, and 32), and the claimed "a 3-d mesh analyzer for receiving a 3-d mesh and dividing an input 3-d mesh into one or more mesh object layers", the functionality of "analyzer" as recited in the claim, for dividing a 3-d mesh into one or more independent mesh layers is similar to receiving the 3-d mesh and decomposing into one or more contours (see fig. 3a and 10) and the newly added limitation in claim 19, "wherein each of the plurality of coded mesh components include information necessary such that, when decoded, is capable of being rendered as a unit mesh part of the 3-D mesh" reads on connectivity information as cited in claim 2, and has been discussed.

***Allowable Subject Matter***

6. Claim 9 is allowed over the prior art of the record.

7. The following is an examiner's statement of reasons for allowance: The claimed invention requires common limitation of "removing redundant information in decoding to reconstruct the original 3-D mash, along with other elements in independent claim 9".

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

8. Claims 11, 18 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Behrooz Senfi** whose telephone number is **(703)305-0132**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Chris Kelley** can be reached on **(703)305-4856**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**Or faxed to:**


**(703) 872-9314**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relative to the status of the application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

B. S. B. S.

3/8/04

  
CHRIS KELLEY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600